

DDR3 SDRAM Product Guide

December 2008

Memory Division

1 2 3 4 5 6 7 8 9 10 11

K 4 B X X X X X X X - X X X X

SAMSUNG Memory Speed

DRAM Temp & Power

DRAM Type Package Type

Density Revision

Bit Organization Interface (VDD, VDDQ)

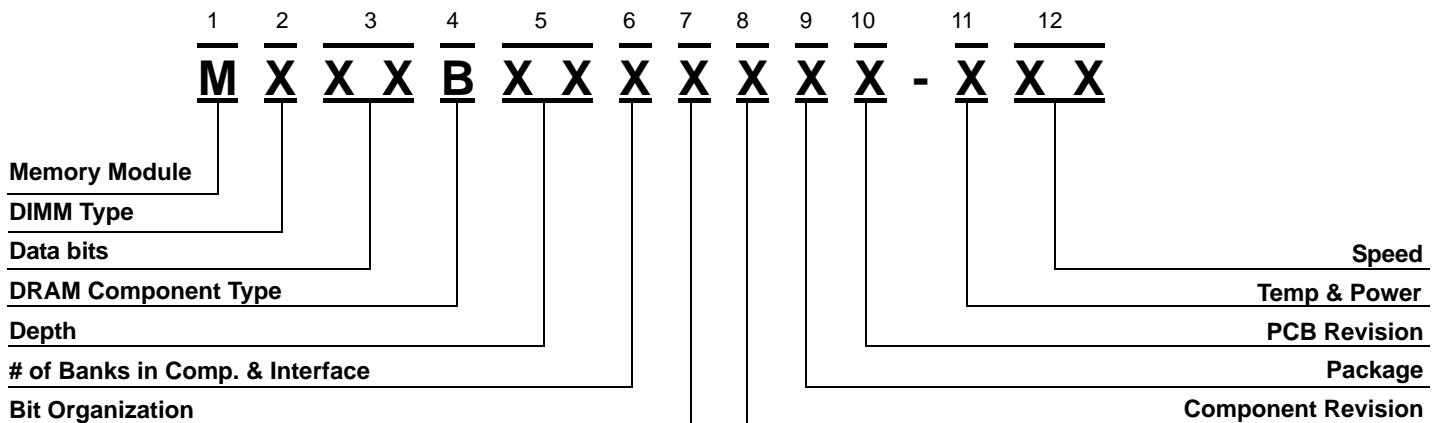
of Internal Banks

F7 : DDR3-800 (400MHz @ CL=6, tRCD=6, tRP=6)
F8 : DDR3-1066 (533MHz @ CL=7, tRCD=7, tRP=7)
H9 : DDR3-1333 (667MHz @ CL=9, tRCD=9, tRP=9)
K0 : DDR3-1600 (800MHz @ CL=11, tRCD=11, tRP=11)

2. DDR3 SDRAM Component Product Guide

Density	Banks	Part Number	Package & Power, Temp. (-C/-L) & Speed	Org.	PKG	Avail.	Note
1Gb D-die	8Banks	K4B1G0446D	HC(L)F7/F8/H9	256M x 4	78 + 4 ball FBGA	Now	
		K4B1G0846D	HC(L)F7/F8/H9	128M x 8			
		K4B1G1646D	HC(L)F7/F8/H9	64M x 16	96 + 4 ball FBGA		
1Gb E-die	8Banks	K4B1G0446E	HC(L)F7/F8/H9/K0	256M x 4	78 ball FBGA	Now	
		K4B1G0846E	HC(L)F7/F8/H9/K0	128M x 8			
		K4B1G1646E	HC(L)F7/F8/H9/K0	64M x 16	96 ball FBGA		
2Gb B-die	8Banks	K4B2G0446B	HC(L)F7/F8/H9	512M x 4	78 ball FBGA	Now	
		K4B2G0846B	HC(L)F7/F8/H9	256M x 8			
		K4B2G1646B	HC(L)F7/F8/H9	128M x 16	96 ball FBGA		
DDP 2Gb D-die	8Banks	K4B2G0446D	MC(L)F7/F8/H9	512M x 4	78 ball FBGA	Now	
		K4B2G0846D	MC(L)F7/F8/H9	256M x 8			
DDP 2Gb E-die	8Banks	K4B2G0446E	MC(L)F7/F8/H9	512M x 4	78 ball FBGA	2Q'09	
		K4B2G0846E	MC(L)F7/F8/H9	256M x 8			
DDP 4Gb B-die	8Banks	K4B4G0446B	MC(L)F7/F8/H9	1G x 4	78 ball FBGA	1Q'09	
		K4B2G0846B	MC(L)F7/F8/H9	512M x 8			

3. DDR3 SDRAM Module Ordering Information



1. Memory Module : M

2. DIMM Type

- 3 : DIMM
- 4 : SODIMM

3. Data Bits

- 71 : x64 204pin Unbuffered SODIMM
- 78 : x64 240pin Unbuffered DIMM
- 91 : x72 240pin ECC unbuffered DIMM
- 92 : x72 240pin VLP Registered DIMM
- 93 : x72 240pin Registered DIMM

4. DRAM Component Type

- B : DDR3 SDRAM (1.5V VDD)

5. Depth

- | | |
|-----------|-----------------------------|
| 32 : 32M | 33 : 32M (for 128Mb/512Mb) |
| 64 : 64M | 65 : 64M (for 128Mb/512Mb) |
| 28 : 128M | 29 : 128M (for 128Mb/512Mb) |
| 56 : 256M | 57 : 256M (for 512Mb/2Gb) |
| 51 : 512M | 52 : 512M (for 512Mb/2Gb) |
| 1G : 1G | 1K : 1G (for 2Gb) |
| 2G : 2G | 2K : 2G (for 2Gb) |

6. # of Banks in comp. & Interface

- 7 : 8Banks & SSTL-1.5V

7. Bit Organization

- 0 : x 4
- 3 : x 8
- 4 : x16

8. Component Revision

- | | |
|--------------|--------------|
| M : 1st Gen. | A : 2nd Gen. |
| B : 3rd Gen. | C : 4th Gen. |
| D : 5th Gen. | E : 6th Gen. |
| F : 7th Gen. | G : 8th Gen. |

9. Package

- Z : FBGA(Lead-free)
- H : FBGA(Lead-free & Halogen-free)
- J : FBGA(Lead-free, DDP)
- M : FBGA(Lead-free & Halogen-free, DDP)

10. PCB Revision

- | | |
|--------------|--------------|
| 0 : None | 1 : 1st Rev. |
| 2 : 2nd Rev. | 3 : 3rd Rev. |
| 4 : 4th Rev. | |

11. Temp & Power

- C : Commercial Temp.(0°C ~ 85°C) & Normal Power
- L : Commercial Temp.(0°C ~ 85°C) & Low Power
- Y : Commercial Temp.(0°C ~ 85°C) & Low VDD(1.35V)

12. Speed

- F7 : DDR3-800 (400MHz @ CL=6, tRCD=6, tRP=6)
- F8 : DDR3-1066 (533MHz @ CL=7, tRCD=7, tRP=7)
- H9 : DDR3-1333 (667MHz @ CL=9, tRCD=9, tRP=9)
- K0 : DDR3-1600 (800MHz @ CL=11, tRCD=11, tRP=11)

Note: PC3-6400(DDR3-800), PC3-8500(DDR3-1066),
PC3-10600(DDR3-1333), PC3-12800(DDR3-1600)

4. DDR3 SDRAM Module Product Guide

240Pin DDR3 Unbuffered DIMM												
Org.	Density	Part Number	Speed	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	Note
128Mx 64	1GB	M378B2873DZ1	F8/H9	128M x 8 * 8 pcs	1Gb	D-die	8	1	78 + 4 ball FBGA	30mm	Now	
		M378B2873EH1	F8/H9/K0	128M x 8 * 8 pcs	1Gb	E-die			78 ball FBGA		Now	
128Mx 72	1GB	M391B2873DZ1	F8/H9	128M x 8 * 9 pcs	1Gb	D-die			78 + 4 ball FBGA		Now	
		M391B2873EH1	F8/H9/K0	128M x 8 * 9 pcs	1Gb	E-die			78 ball FBGA		Now	
256Mx 64	2GB	M378B5673DZ1	F8/H9	128M x 8 * 16 pcs	1Gb	D-die		2	78 + 4 ball FBGA		Now	
		M378B5673EH1	F8/H9/K0	128M x 8 * 16 pcs	1Gb	E-die			78 ball FBGA		Now	
256Mx 72	2GB	M391B5673DZ1	F8/H9	128M x 8 * 18 pcs	1Gb	D-die			78 + 4 ball FBGA		Now	
		M391B5673EH1	F8/H9/K0	128M x 8 * 18 pcs	1Gb	E-die			78 ball FBGA		Now	
512Mx 64	4GB	M378B5273BH1	F8/H9	256M x 8 * 16 pcs	2Gb	B-die			78 ball FBGA		Now	
512Mx 72	4GB	M391B5273BH1	F8/H9	256M x 8 * 18 pcs	2Gb	B-die			78 ball FBGA		Now	

204Pin DDR3 SODIMM												
Org.	Density	Part Number	Speed	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	Note
128Mx 64	1GB	M471B2874DZ1	CF7/F8/H9	64M x 16 * 8 pcs	1Gb	D-die	8	2	96 + 4 ball FBGA	30mm	Now	
		M471B2873EH1	CF7/F8/H9	128M x 8 * 8 pcs	1Gb	E-die		1	78 ball FBGA		Now	
256Mx 64	2GB	M471B5673DZ1	CF7/F8/H9	128M x 8 * 16 pcs	1Gb	D-die		2	78 + 4 ball FBGA		Now	
		M471B5673EH1	CF7/F8/H9	128M x 8 * 16 pcs	1Gb	E-die		2	78 ball FBGA		Now	
512Mx 64	4GB	M471B5273BH1	CF7/F8/H9	256M x 8 * 16 pcs	2Gb	B-die		2	78 ball FBGA		Now	

240Pin DDR3 Registered DIMM												
Org.	Density	Part Number	Speed	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	Note
128Mx 72	1GB	M393B2873DZ1	CF7/F8/H9	128M x 8 * 9 pcs	1Gb	D-die	8	1	78 + 4 ball FBGA	30mm	Now	
		M393B2873EH1	CF7/F8/H9	128M x 8 * 9 pcs	1Gb	E-die		1	78 ball FBGA		Now	
256Mx 72	2GB	M393B5673DZ1	CF7/F8/H9	128M x 8 * 18 pcs	1Gb	D-die		2	78 + 4 ball FBGA		Now	
		M393B5673EH1	CF7/F8/H9	128M x 8 * 18 pcs	1Gb	E-die		2	78 ball FBGA		Now	
		M393B5670DZ1	CF7/F8/H9	256M x 4 * 18 pcs	1Gb	D-die		1	78 + 4 ball FBGA		Now	
		M393B5670EH1	CF7/F8/H9	256M x 4 * 18 pcs	1Gb	E-die		1	78 ball FBGA		Now	
512Mx 72	4GB	M393B5173DZ1	CF7/F8	128M x 8 * 36 pcs	1Gb	D-die		4	78 + 4 ball FBGA		Now	
		M393B5173EH1	CF7/F8	128M x 8 * 36 pcs	1Gb	E-die		4	78 ball FBGA		Now	
		M393B5170DZ1	CF7/F8/H9	256M x 4 * 36 pcs	1Gb	D-die		2	78 + 4 ball FBGA		Now	
		M393B5170EH1	CF7/F8/H9	256M x 4 * 36 pcs	1Gb	E-die		2	78 ball FBGA		Now	
1Gx 72	8GB	M393B1G70DJ1	CF7/F8	DDP 512M x 4 * 36 pcs	1Gb	D-die		4	78 ball FBGA		Now	
		M393B1G70EM1	CF7/F8	DDP 512M x 4 * 36 pcs	1Gb	E-die		4	78 ball FBGA		1Q'09	
		M393B1K73BH1	CF7/F8	256M x 8 * 36 pcs	2Gb	B-die		4	78 ball FBGA		Now	
		M393B1K70BH1	CF7/F8/H9	512M x 4 * 36 pcs	2Gb	B-die		2	78 ball FBGA		Now	
2Gx 72	16GB	M393B2K70BM1	CF7/F8	DDP 1G x 4 * 36 pcs	2Gb	B-die			4		78 ball FBGA	

240Pin DDR3 VLP Registered DIMM												
Org.	Density	Part Number	Speed	Composition	Comp. Version		Internal Banks	Rank	PKG	Height	Avail.	Note
128Mx 72	1GB	M392B2873DZ1	CF7/F8/H9	128M x 8 * 9 pcs	1Gb	D-die	8	1	78 + 4 ball FBGA	18.75mm	Now	
		M392B2873EH1	CF7/F8/H9	128M x 8 * 9 pcs	1Gb	E-die			78 ball FBGA		Now	
256Mx 72	2GB	M392B5673DZ1	CF7/F8/H9	128M x 8 * 18 pcs	1Gb	D-die		2	78 + 4 ball FBGA		Now	
		M392B5673EH1	CF7/F8/H9	128M x 8 * 18 pcs	1Gb	E-die			78 ball FBGA		Now	
		M392B5670DZ1	CF7/F8/H9	256M x 4 * 18 pcs	1Gb	D-die		1	78 + 4 ball FBGA		Now	
		M392B5670EH1	CF7/F8/H9	256M x 4 * 18 pcs	1Gb	E-die			78 ball FBGA		Now	
512Mx 72	4GB	M392B5170DJ1	CF7/F8/H9	DDP 512M x 4 * 18 pcs	1Gb	D-die		2	78 ball FBGA		Now	
		M392B5170EM1	CF7/F8/H9	DDP 512M x 4 * 18 pcs	1Gb	E-die			78 ball FBGA		1Q'09	
		M392B5273BH1	CF7/F8/H9	256M x 8 * 18 pcs	2Gb	B-die		2	78 ball FBGA		Now	
		M392B5270BH1	CF7/F8/H9	512M x 4 * 18 pcs	2Gb	B-die		1	78 ball FBGA		Now	
1Gx 72	8GB	M392B1K73BM1	CF7/F8	DDP 512M x 8 * 18 pcs	2Gb	B-die		4	78 ball FBGA		1Q'09	
		M392B1K70BM1	CF7/F8/H9	DDP 1G x 4 * 18 pcs	2Gb	B-die		2	78 ball FBGA		1Q'09	

5. RDIMM RCD Information

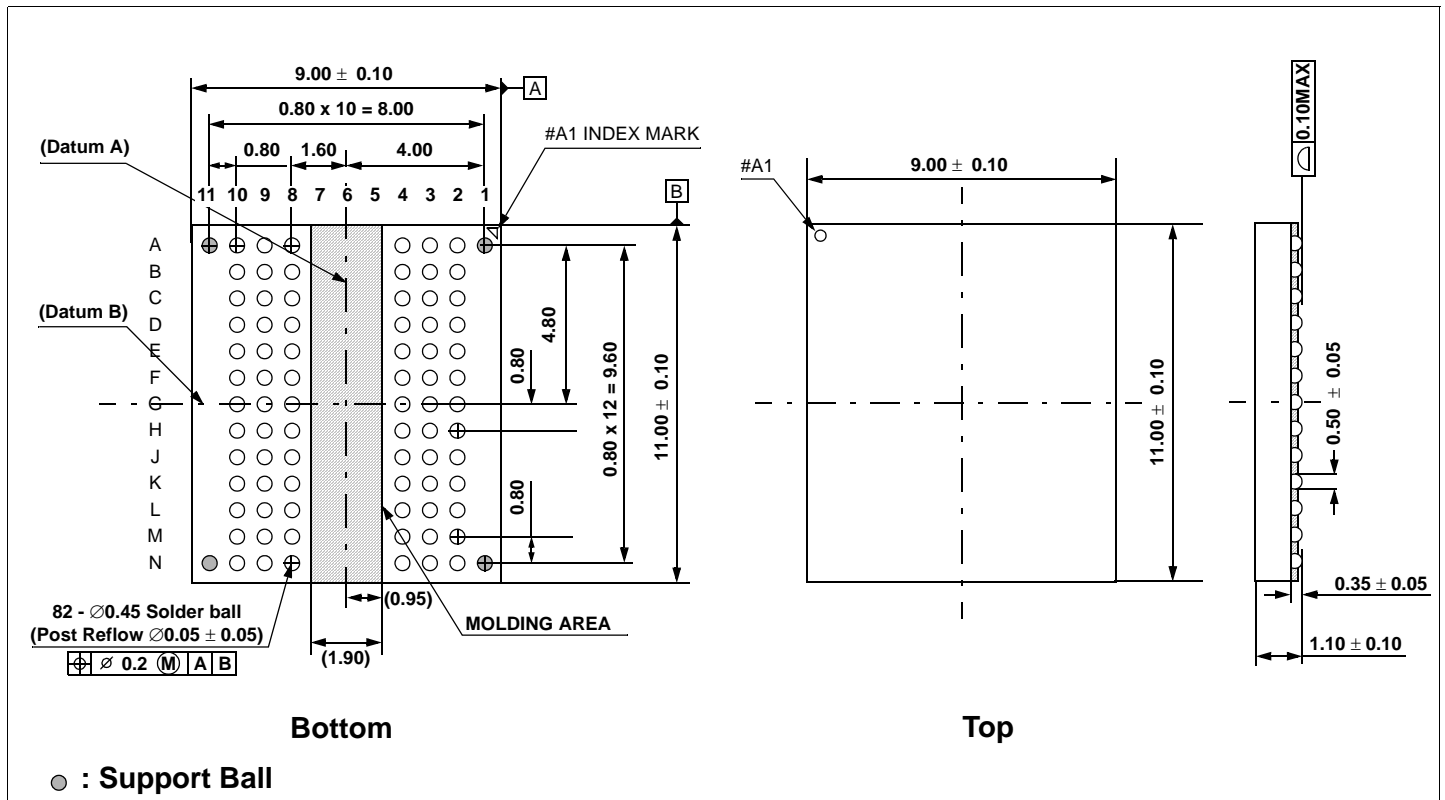
- 1. RCD Identification in JEDEC Description in Module Label
- 2. Label Example



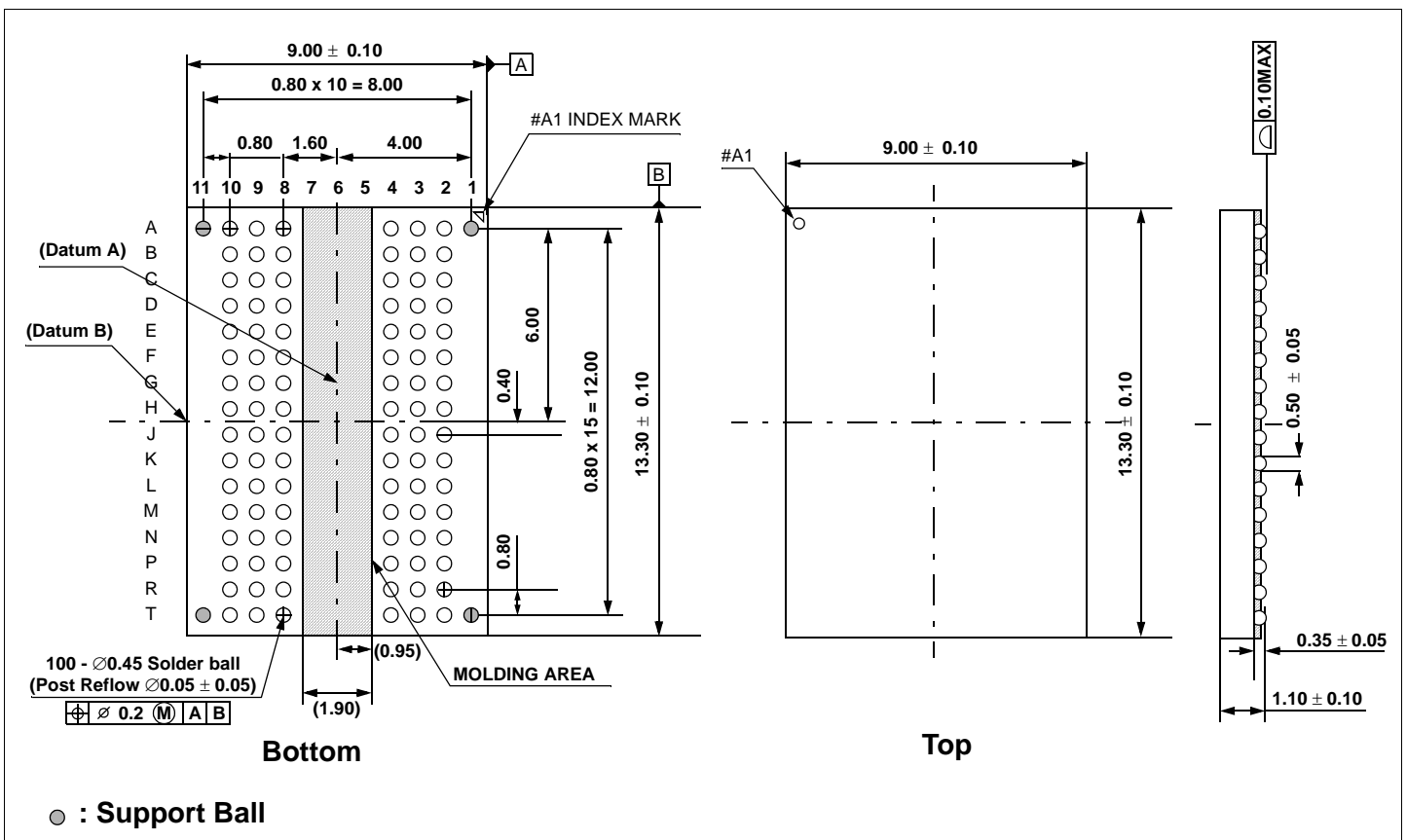
- 3. RCD Information
- Example

Vendor	Revision	Module P/N	JEDEC Description On Label
Inphi	B2	M393B5170EH1-CH9	4GB 2Rx4 PC3-10600R-09-10-E1-P0
IDT	B0	M393B5170EH1-CH9	4GB 2Rx4 PC3-10600R-09-10-E1-D2

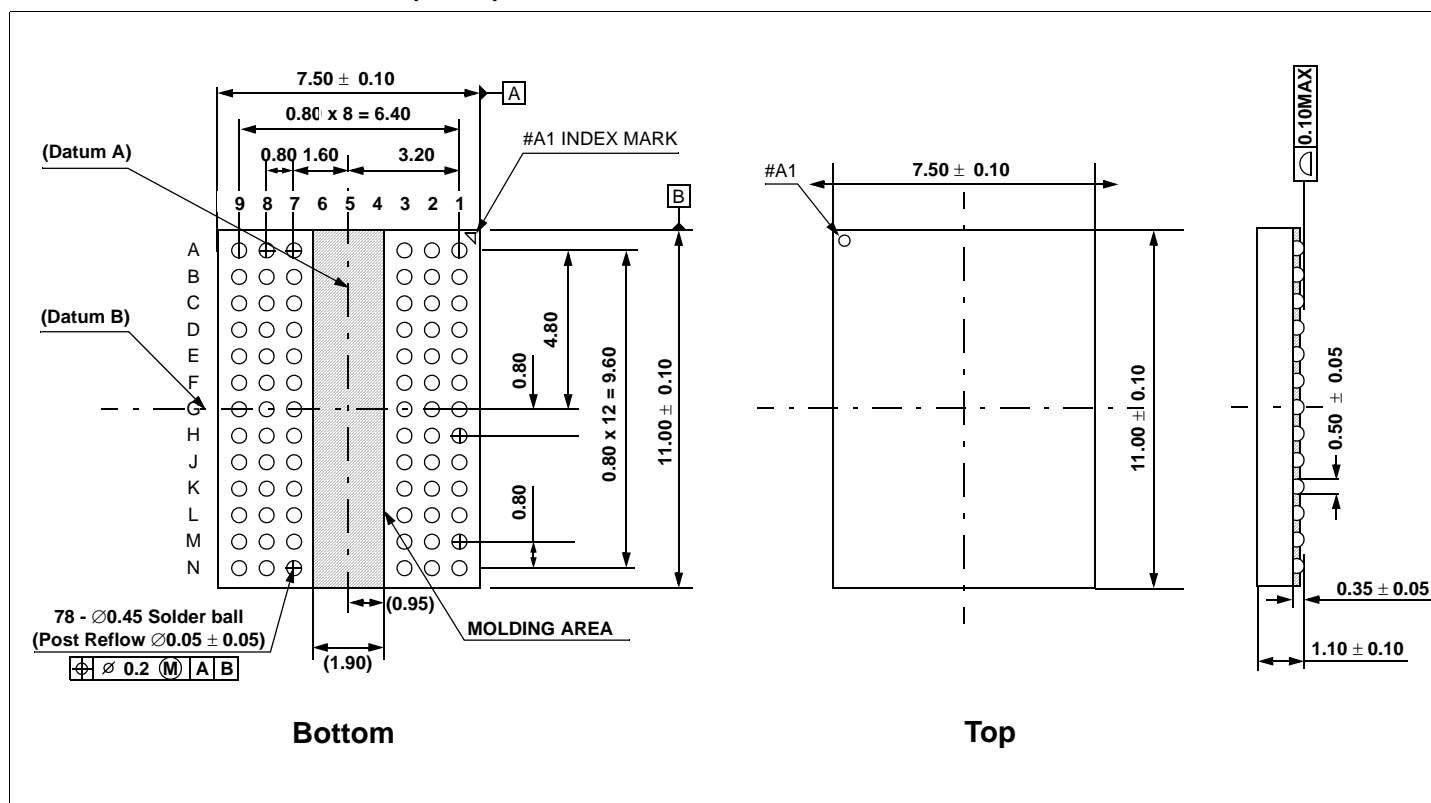
78 + 4Ball FBGA for 1Gb D-die (x4/x8)



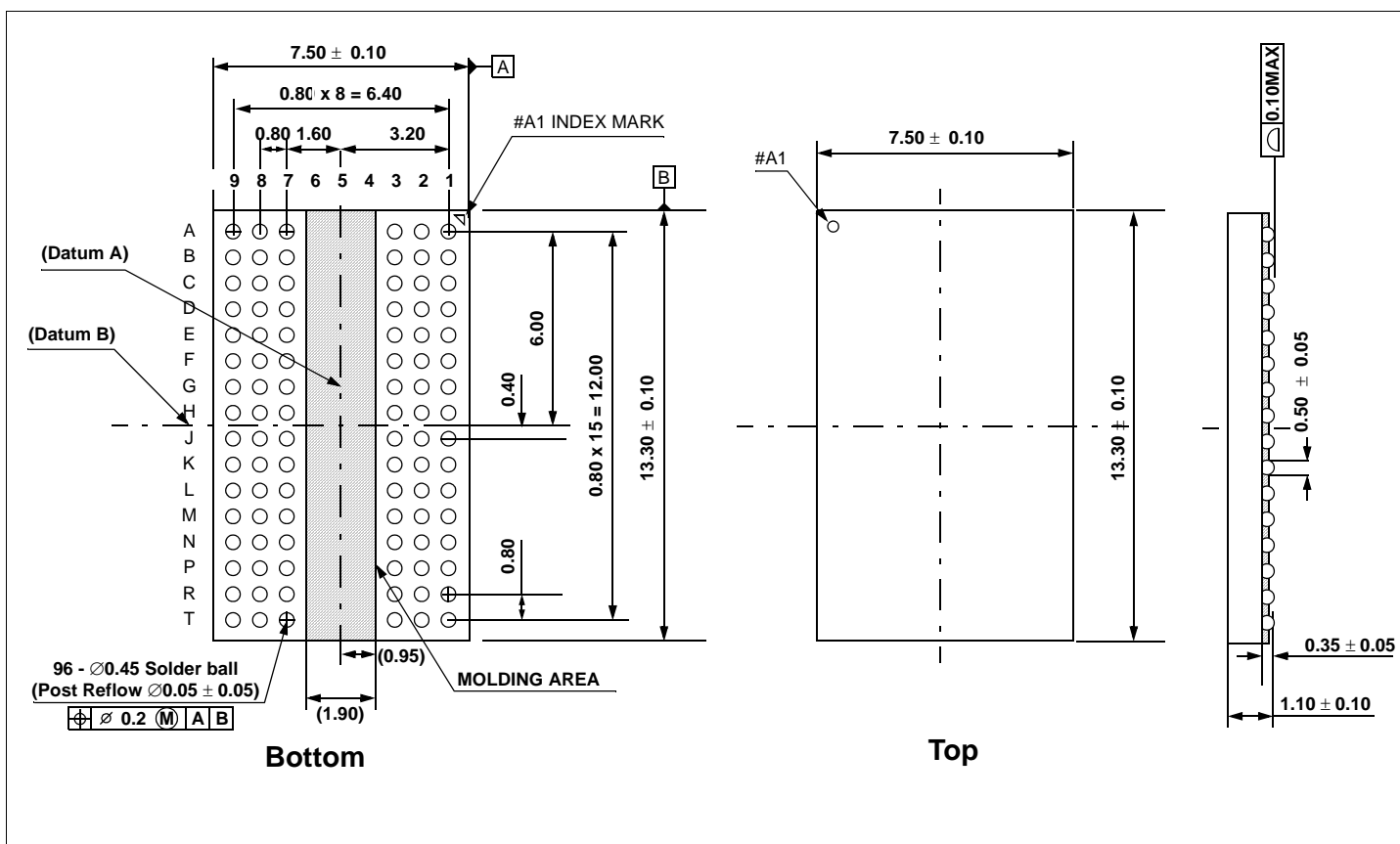
96 + 4Ball FBGA for 1Gb D-die (x16)



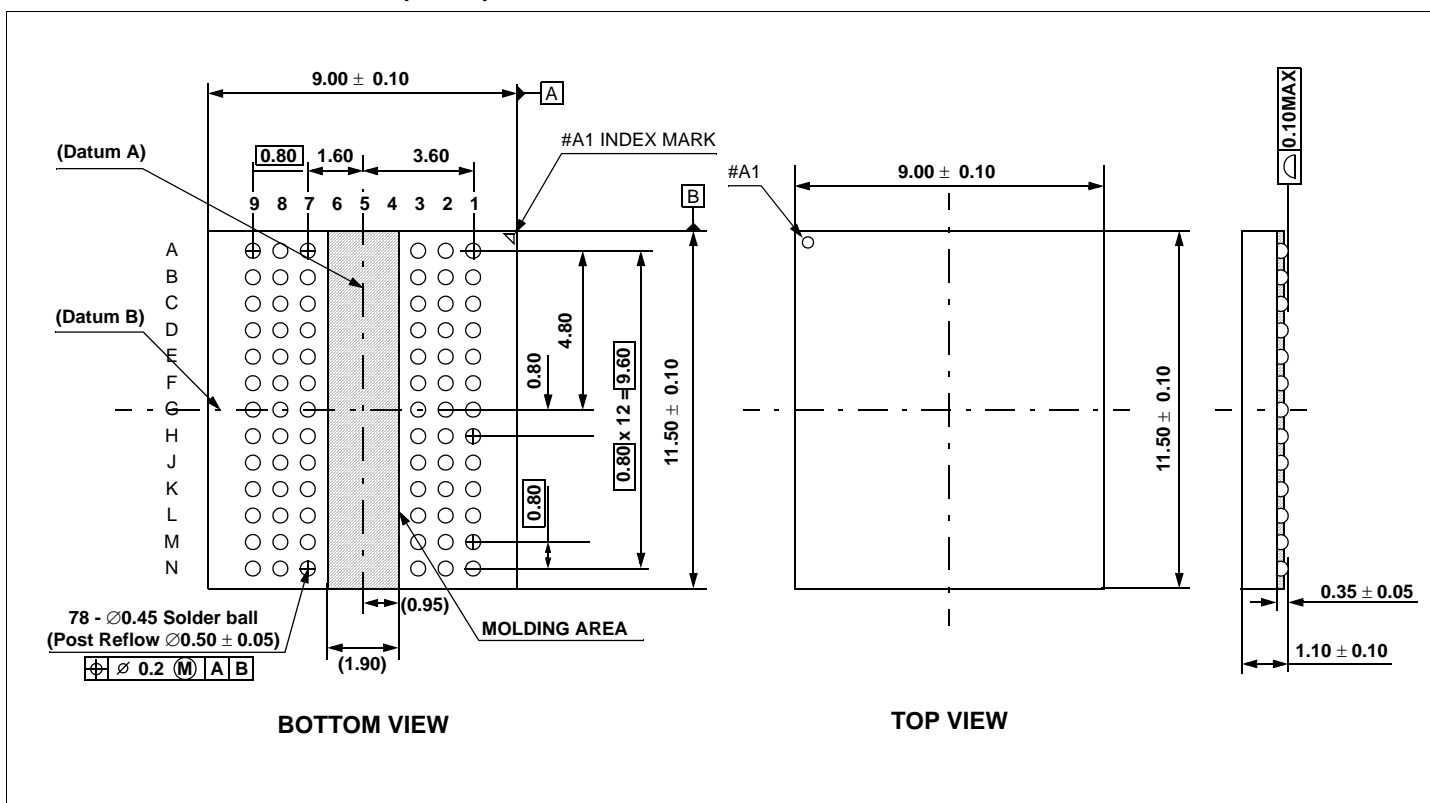
78 Ball FBGA for 1Gb E-die (x4/x8)



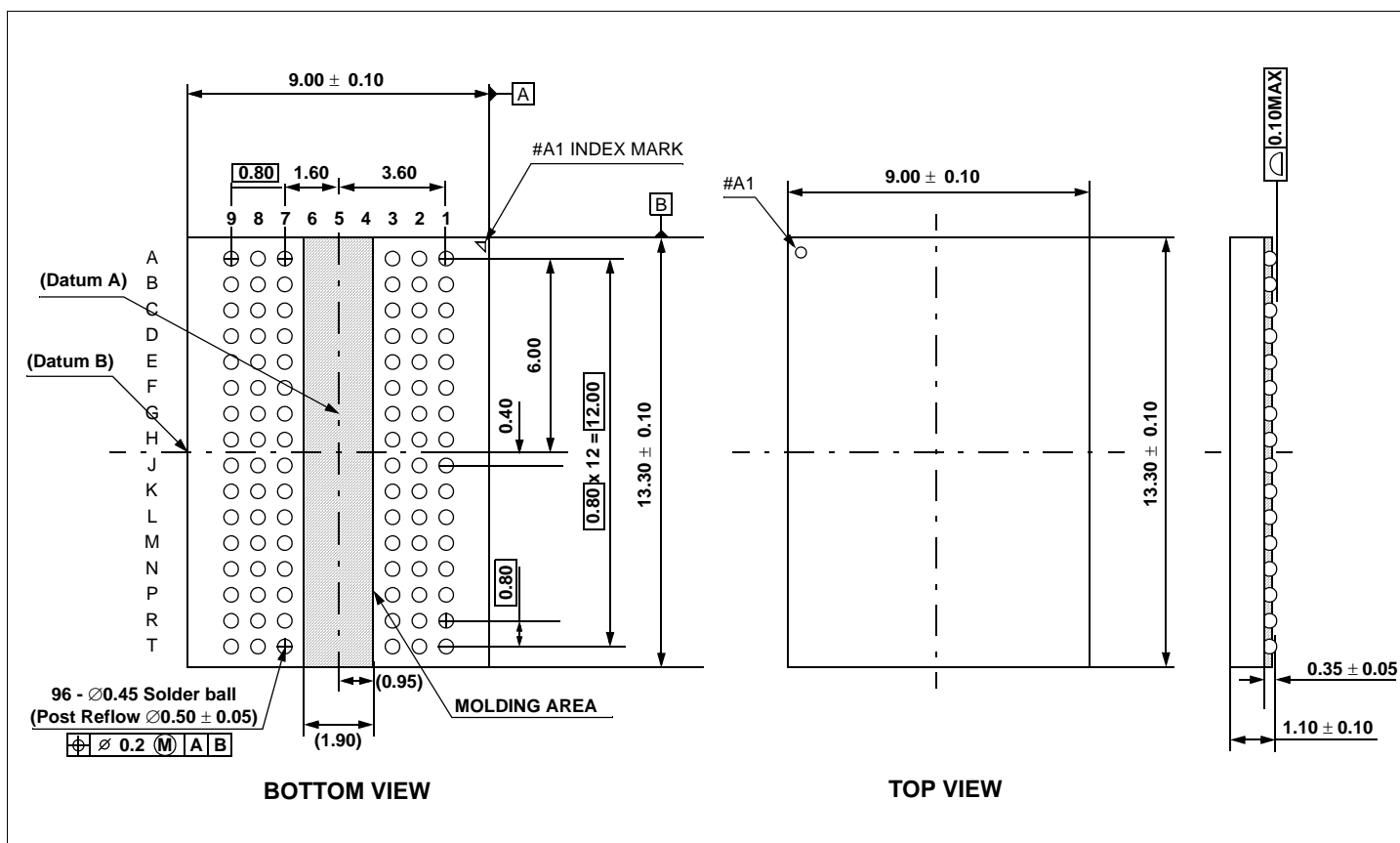
96 Ball FBGA for 1Gb E-die (x16)



78Ball FBGA for 2Gb B-die (x4/x8)

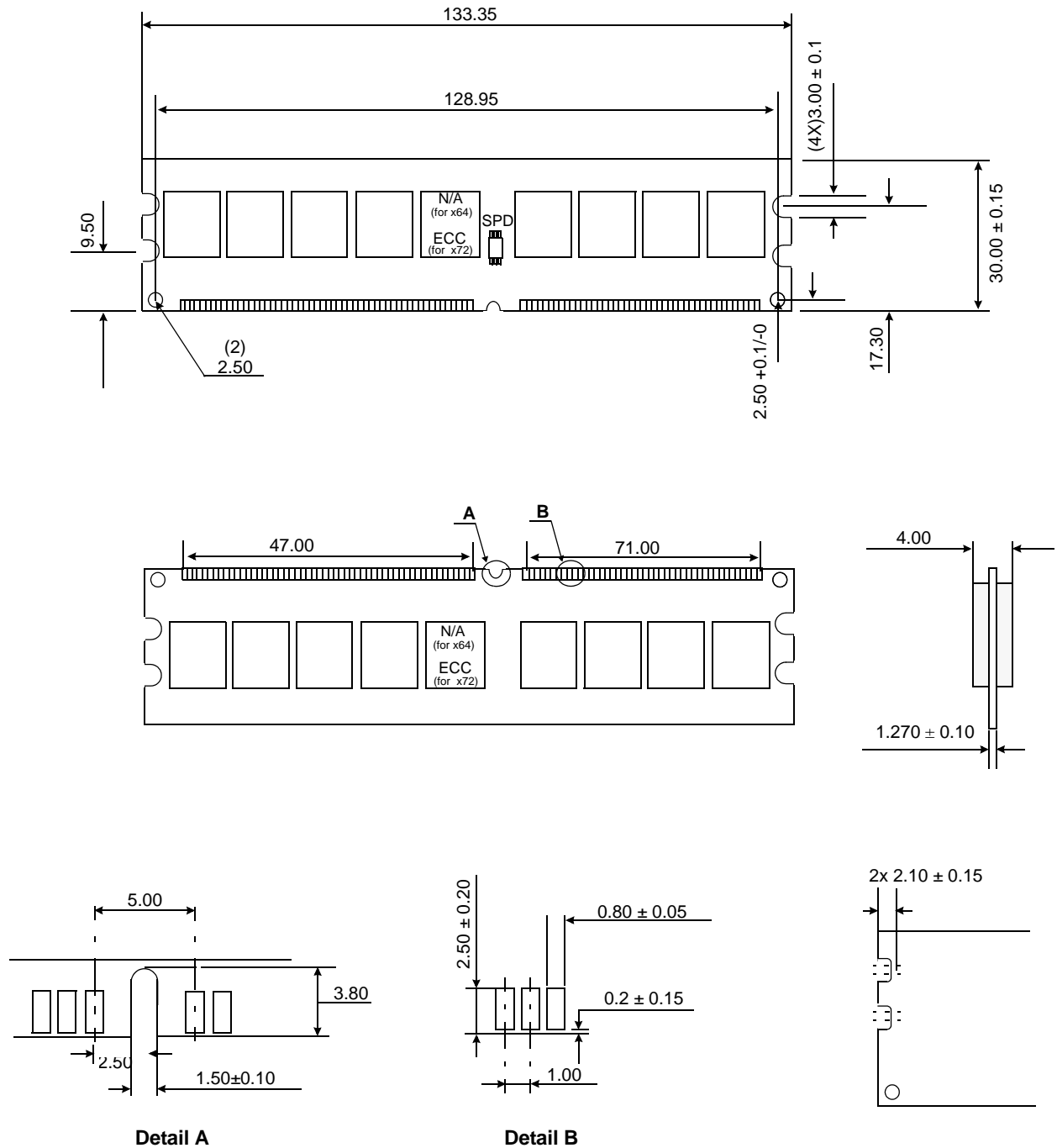


96Ball FBGA for 2Gb B-die (x16)



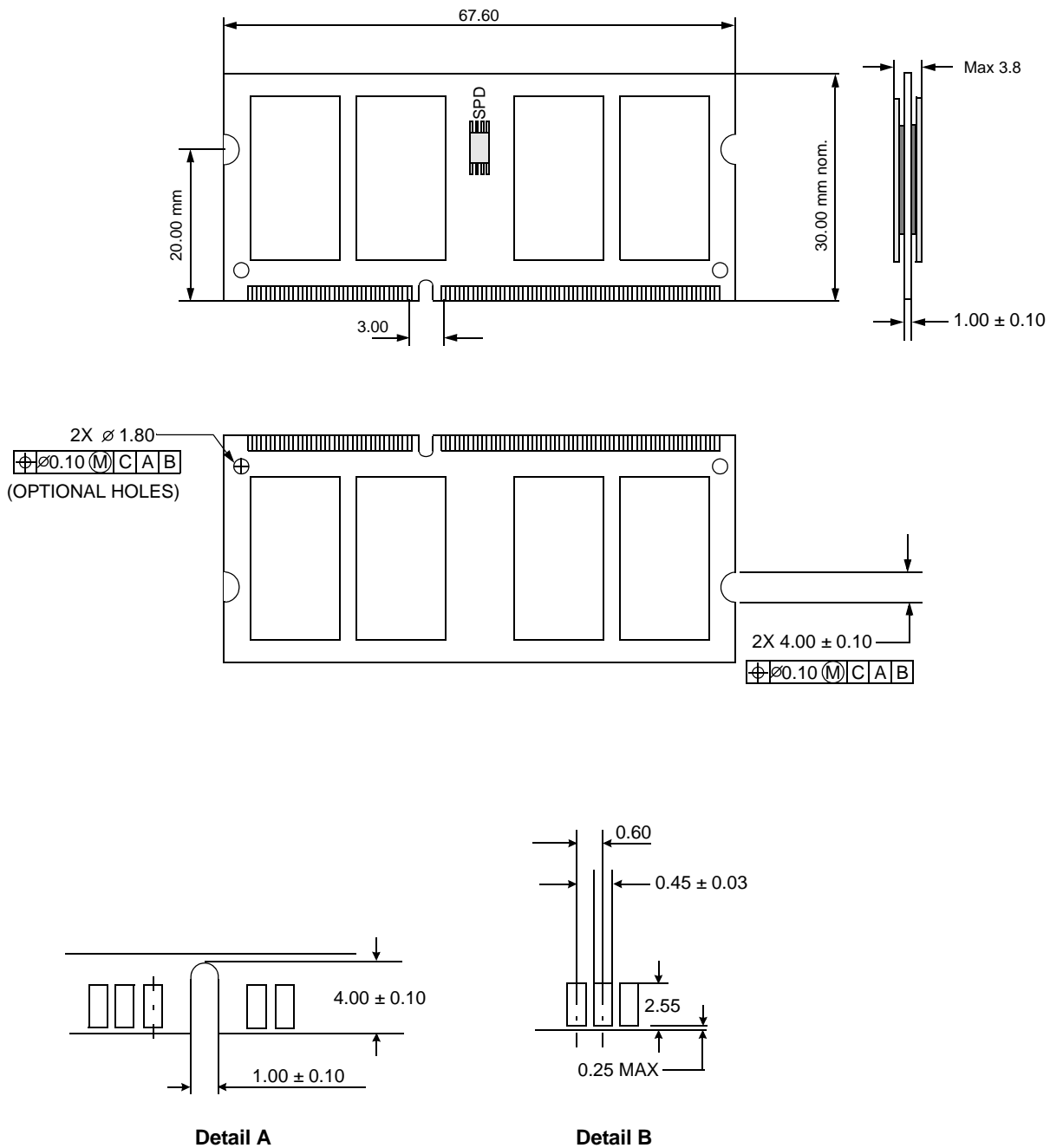
x64/x72 240pin DDR3 SDRAM Unbuffered DIMM

Units : Millimeters

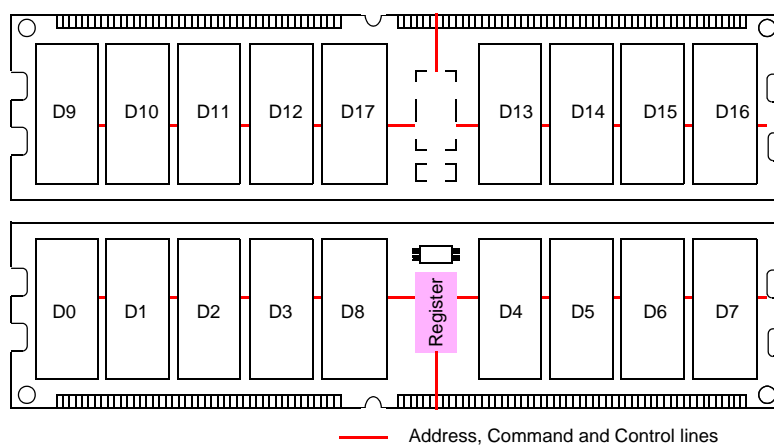
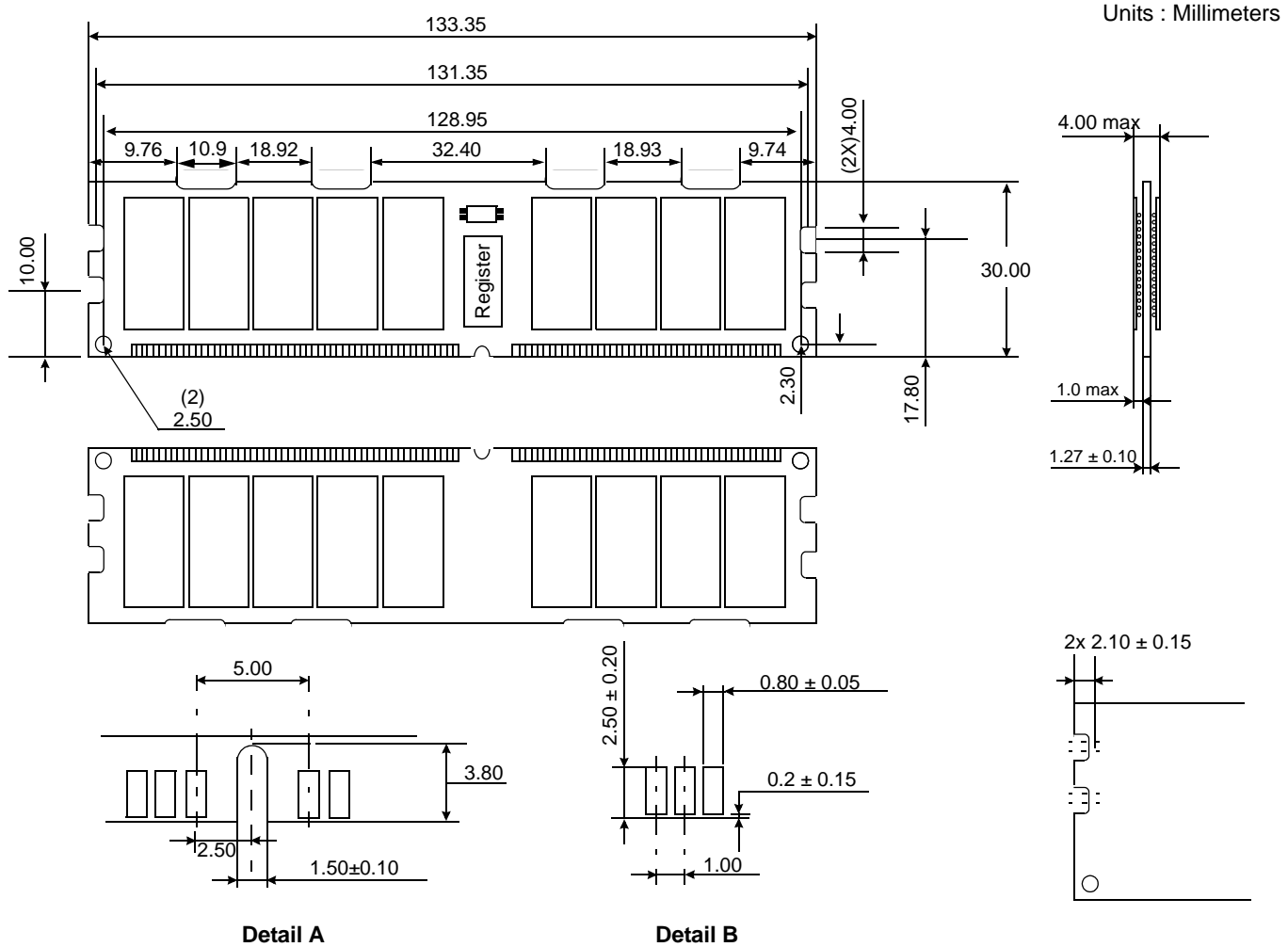


x64 204pin DDR3 SDRAM Unbuffered SODIMM

Units : Millimeters

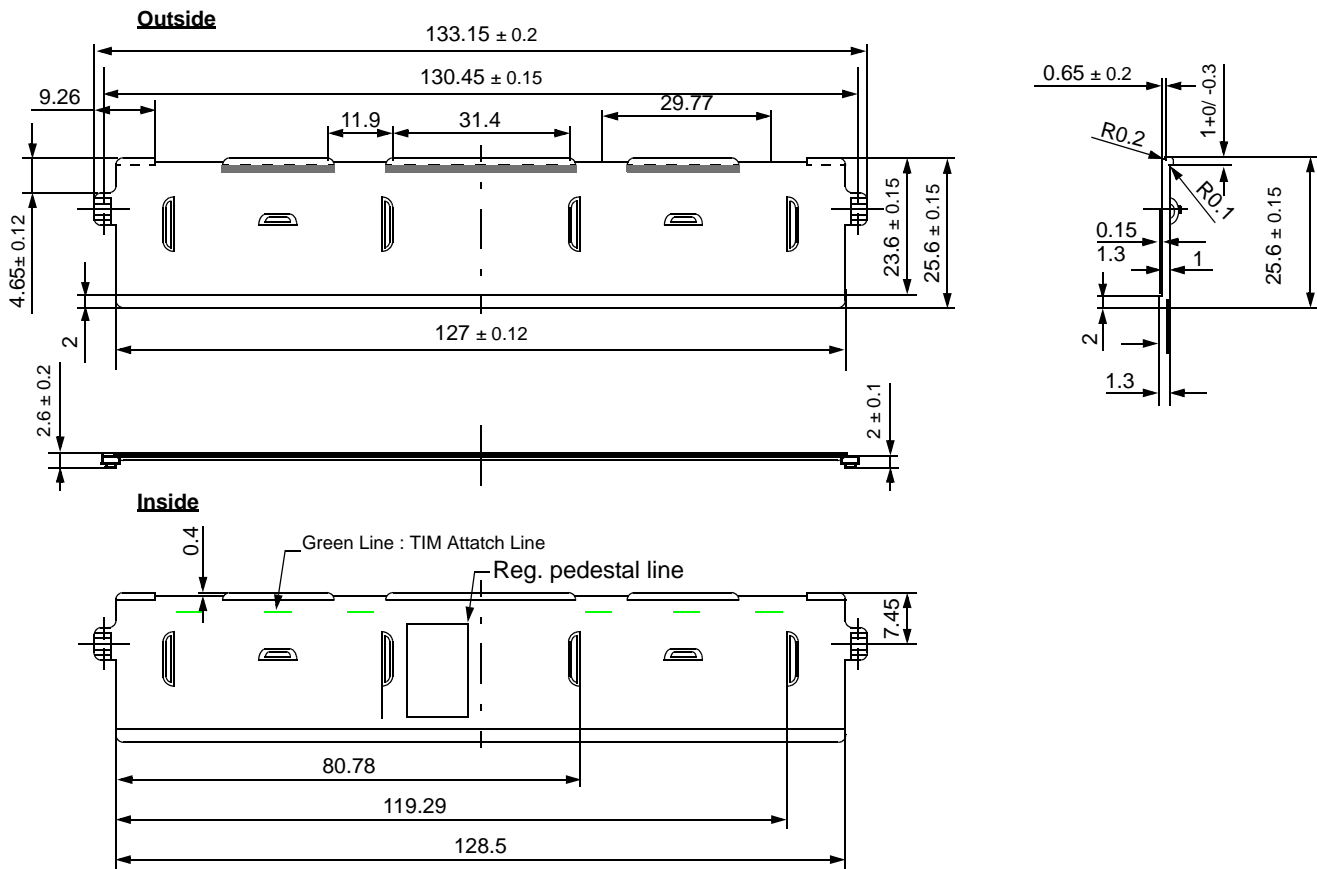


x72 240pin DDR3 SDRAM Registered DIMM

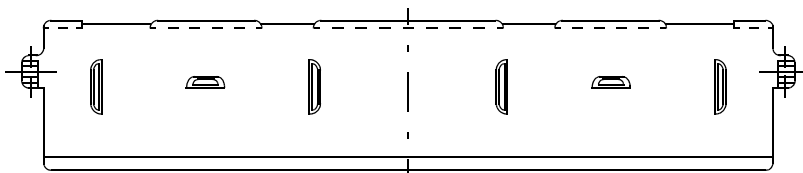
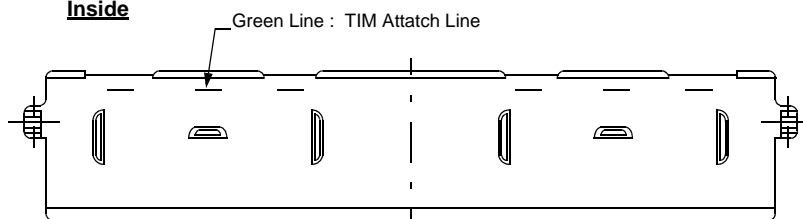


Registered DIMM Heat Spreader Design

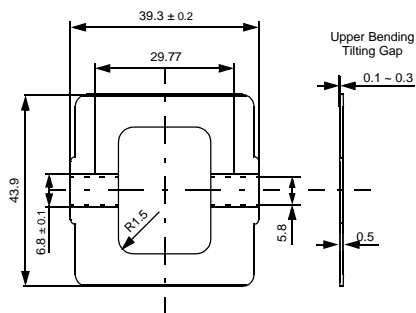
1. FRONT PART



2. BACK PART

Outside**Inside**

3. CLIP PART



4. DDR3 RDIMM ASS'Y View

Reference thickness total (nominal) : Mono Package : 7.55mm, DDP Package 7.71mm (With Clip thickness)

